

## Ofsted-proof your KS3 Maths curriculum

### **OUP, Sam Evans**

Hello and welcome to the Oxford Education podcast. In this episode, we discuss how to Ofsted proof your curriculum with guests, Will Power, maths publisher at Oxford University Press and David Harris, PD lead at LSE Maths Hub and teaching for mastery specialist for the NCETM. Will and David discuss coherence and mastery in the key stage 3 maths classroom. We hope you enjoy the conversation.

### **Will Power**

Hi everybody. Little intro for those who don't know who I am. My name is Will Power. I'm the maths publisher for OUP, so I work on all of the amazing maths products from EYFS all the way up to A-level. But before that, I was a teacher for 13 years in London and most recently a head teacher in Oxford. But I've also worked abroad as a consultant in India. And over that time of taught maths in all its forms, primary and bit secondary here and abroad. So that's me. I'm absolutely honoured to be sharing this space with David Harris and I've been tasked with introducing him and also asking him some questions. And I love this bio that I'm going to read out from David. So David, a dynamic leader within education with a proven track record of raising standards through development, mentoring and coaching of other leaders and teachers and outstanding teacher and tutor of mathematics is passionate about engaging pupils and is a specialist in improving outcomes for neurodivergent young people. And I would add to that that David has also worked as an NCETM mastery specialist. And I actually learned today that he took part in the Shanghai Exchange programme, which I think is very impressive. And also David is a current maths teacher and assistant head in a school in London. So hi, David, how are you doing?

### **David Harris**

Very well thank you, very well.

### **Will Power**

A grand introduction for you.

### **David Harris**

A lot of pressure, lot of pressure.

### **Will Power**

I'm going to kick off with something quite simple, I think. Really. What would you think are the main challenges of the key stage three classroom?

### **David Harris**

Ohh the challenges of the key stage 3 classroom are a lot, I'd say. Let's start with the basics. The differences in ability. We've got feeder schools coming in from everywhere in every classroom. And we don't know always what's come before us. From a head of department perspective, you've got members of staff who are having to deal with young people who have been taught how to add fractions and have not been taught how to add fractions and so making sure that your curriculum is mapped to deal with

that difference and ability, especially when you consider things like COVID right. Some kids had a really good provision during COVID, but we know the differences between our weakest and our strongest got bigger massively so as a result of COVID and so it's no small thing. But yeah, I would say difference in ability is 1 significant thing.

### **Will Power**

So when they come in, those kind of bright and keen year sevens with all of those different experiences, what do you guys do at your school?

### **David Harris**

Well, currently we make sure that our curriculum is really key stage 3 focused. I know it sounds weird. Key stage 3 curriculum should be key stage 3 focused. However, what I've found in many schools is that your key stage 3 curriculum is mapped to key stage two. Often members of staff spend extended periods of time just going over things that they should already know. And so what we do is we do our best to embed. So if students should already know how to add fractions, we do still spend a small amount of time refamiliarising them with what they should already know. But it's all about extending that prior knowledge and where we see there are significant gaps we put in numeracy programmes outside of the classroom just to make sure that they can keep up and really get the best out of curriculum.

### **Will Power**

So that that kind of dialogue between what's happening at key stage two and key stage 3 is really important.

### **David Harris**

Yeah, it can't be underplayed. And you know where it's possible. In my prior school, we did a lot of work with our feeder schools to go into the feeder schools and actually look at what is your curriculum, what are you teaching them at primary? What should they be coming to us with? And it was really interesting actually, because many of those teachers would come to us and they'd be like, there's no way you're teaching this because they know our actual kids. So they'll go 'There's no way so-and-so in year 7 can't multiply 3 digit by two digit numbers, they were doing that eight weeks ago. I know they can do this.' And so having that dialogue between.. It's a bit of a dream scenario., in my old school that actually happened. Because time - where is the time for staff to organise that type of CPD opportunity both for the key stage three teachers, but also for those primary school teachers? So they know what comes next. It's significant and I don't think we really talk enough about the difficulty in providing maths education at primary. When I was in Shanghai, those primary school teachers only taught maths. The maths teachers in a primary school setting only taught maths, but our primary school teachers teach everything you know and that is no... they're superheroes for doing so. It's no small task.

### **Will Power**

And I think what you've kind of described there is importance of that of a really good transition and communicating between feeder primaries and secondaries. But also I think this is you know it's one of the themes of this webinar is about coherence and actually making the experience that pupils have in year 6 going up to year seven, but also in key stage three is really coherent. So I guess my second

question is about that what do you think are the key pillars, I guess, of a coherent curriculum? What are the key things that you think a coherent curriculum has to be impactful?

### **David Harris**

I think there's a few kind of whole school things that are necessary. You need a feeling of consistency and established ways of being, your behaviour learning. All of the things outside of the curriculum need to be OK so that you can have consistent learning happening over time, but where that is in place, really what we need is a depth of thought from teachers. Around why different units are placed and where they are placed and how they relate to each lesson? It's really important. I can't understate it, that each teacher has that for themselves. It's not of great use having the best schemes of work or the best resources. If the teachers don't understand the journey they're taking their children on, because if students don't, if staff don't know that journey and can't appreciate, you know, the beauty in each individual step, like why am I teaching, for example, similar shapes before I'm teaching perpendicular gradients. Oh, I'm doing that because the proof of perpendicular gradients relies on similar shapes, and so I can use this opportunity in the next lesson. And if you're excited and you're aware of these nuances, then you can really take students on a journey of coherence. But when you're not aware of it every lesson becomes stand alone and those links are not felt by the teacher. And if they're not felt by the teacher, the teacher, it's not impossible. But it's very hard for the teacher to then pass on those links, those structural understandings between lessons.

### **Will Power**

Yeah, I love the idea of the links not being felt and I think as someone that's worked mainly in primary and worked with non, I guess specialist maths teachers, I think all primary school could teach a specialist teaching maths but in a slightly different way. I do think that subject knowledge that underpins that feeling of what went before, how does that inform my doing now and then? What needs to go next? is absolutely critical and maybe drawing on some of your experience as a mastery specialist. David, what would you advise schools to do to try and foster that in their staff?

### **David Harris**

It's time, I think time and training is everything. I think where I've been fortunate enough to go through the training provided by the NCETM it just what they gave me was time and attention to detail around the key information. That goes into planning and in maths. You know I'm a snob for maths and so when I say that I say that to say in every single unit we teach there is so much detail. There are so many small points that you can focus on - that oral significance cognitively for our young people. That it's no small task, and often teachers shy away from engaging in this level of thought because of how big a task it is.

Actually, even when I was part of the Shanghai project and the teachers came from Shanghai to London and they saw the range of schemes of work that I had to engage with. They said how do you manage this? Because they would only teach one class. One year group, that's all they would teach and they would teach that same year group twice a day and that's it. And so they would only engage in one scheme of work, but where many of us are teaching year seven-year eight-year 10, year 11, year 12, engaging in those schemes of work is very hard to do in great depth. But if we want coherence from staff, we have to give them time to contemplate. And often we're focused on what to do rather than why we think and what we're thinking, which is what coherence is all about.

## **Will Power**

Yeah, I think that's so interesting. And that time element really interesting to hear from your experiences in Shanghai as well. I mean, I think what we try and do at OUP as well is create products that strip away all of the things that teachers don't need to have to worry about so that they can concentrate and have that time to focus on the things that really matter. And yeah, fascinating to hear your reflections on coherence and what allows teachers to understand the coherence of the different elements of a curriculum. And I think key stage three, I don't know if this is true, David, but you know, you do get in schools the non specialist maths teacher who might have pedagogical knowledge, but they don't necessarily understand those nuts and bolts of the curriculum that will help them to take the kids on that journey. And I suppose the *Oxford Smart Curriculum*, the Maths Mosaic that we're developing, is, is designed to do that sort of holding the hands of every teacher, whoever they are, no matter what experience they've got in the classroom or of maths, to give them the opportunity to think about the maths and give them that time.

I'd really like to talk about mastery. So what's your understanding of mastery, David? And how do you think Mastery can support schools to deliver a really impactful curriculum?

## **David Harris**

That's a very big question, it's a very big question and you know, for my work at the mastery specialist, I'm going to take it to the five big ideas and because that's really how I see. For those of you who don't know, the five big ideas, the NCETM has five big ideas which surround mastery. That's kind of their brand of mastery. And so for me, those key pillars are fundamental to embedding mastery support structures across your curriculum. So your representations, which is basically how we see the maths, this is for me, it's probably the most important idea. Because if students are given the right representations to see the maths, then they can begin the journey and then they can be independent. But the issue for many of our young people is in being able to see the maths. They can't even get in the door. They can't answer any questions because they have no way of translating the maths being presented to them into a way of seeing and being that identifies with them. It's like oh, you're speaking another language, Sir. I don't know what you want about. And so representations are really, really important.

And following your representations, I would focus on our variation theory. So how you kind of flesh out misconceptions cause it's important to see the maths, but if you don't understand the correct domain of application you can misuse or misunderstand where to place different parts of the maths. So that's kind of like our second idea. And then playing with the maths, our mathematical thinking, so if you're not doing enough mathematical thinking, then often you're just engaged in a routine understanding of something you're only looking at the bare nuts and bolts and mastery is a thing of beauty. And so I think it's really important that young people are able to see that and they don't see it as just a tool. Because that does limit their capacity to engage with it significantly. I would say lastly, making sure we've got our fluency down. Because if you don't have that fluency underpinning all of that other stuff, it goes. You know, it doesn't become a lasting, supportive structure. It's just some fun stuff like playing a game of Connect 4. It was fun, but I didn't understand the structures that helped me to win. The things I should be looking out for, the ways I can play with what I can see. How can I translate shapes playing connect

four so that I can get a two way win? That type of thinking is what you really want to be nurturing in your students.

### **Will Power**

I guess it's that deeper understanding that comes from like you say, you know, seeing those visual representations that unlock the maths in a way that is bigger than just learning tricks, which is often what maths can end up boiling down to. Really making it stick. So they'll it lasts.

I love hearing all the words you're using David which, you know, they're not traditional 'maths-y' words like feeling the maths, experiencing it, seeing it, all of those things and I think that's absolutely critical. We work a lot with Craig Barton. He's really anti, you know, maths is a tool for the being able to access the wider world. He's maths should be something that everybody experiences and sees the beauty of and can see those connections, and I think that's absolutely right, and I think the best maths teaching does do that.

OK, last question. This is always the big bad O question, so the title of this mentions Ofsted and I think everything you've talked about kind of ties really closely to schools who are thinking about OK how do I make the best provision for my maths? How do I make my key three curriculum, coherent. How do you think that should be in when thinking about Ofsted and an inspection and we we'll have teachers on online now that will be potentially expecting Ofsted. What should they be doing to make their curriculum as robust as possible for an inspection.

### **David Harris**

That is a hard question, I would say really do the above with integrity and consistency. And then really, you know, Ofsted is important, but fundamentally you know we have a duty of care to the young people we serve. So if you are doing and you have a plan you believe in, that addresses the challenges in the key stage three classroom and you've been embedding your plans consistently, whatever Ofsted says you're doing the best by those young people. The difficulty we find in schools is a lack of consistency. Where there is a lack of consistency, the outcomes are poor, or where the outcomes are poor Ofsted before they even arrive will have a judgement of you because outcomes speak first. And so I would say yeah, integrity and consistency, have your plans put them in place and then deliver them consistently.

### **Will Power**

Yeah, and I've been through far too many Ofsteds in my career and I still wake up in the middle of the night in a cold sweat. Even when they've gone well, they're still terrifying, but I guess especially with the new framework, the buzzword of consistency and how that links to coherence is massive. So you know, a key stage three offer that really connects with what's gone before. Everything you talked about at the start in terms of engaging with feeder schools, but also how it prepares kids for key stage four, but also that coherence within the key stage 3 curriculum. You know, how do all of the different elements linked together and how can you show that there's that progression?

I mean, I'm going to be really, really blunt and upfront and saying that we're making a product with Craig Barton, who is absolutely credible, and he's basically spent the last 10 years pondering all of these questions, and I'm sure lots of you will know, Craig. He's written books. He's produced what I think is an

incredibly elegant pedagogical progression, so he's looked at the way students learn and the skills they need to be proper mathematicians and not just learn tricks and he's put that together in his learning episode model. And what we've tried to do at Oxford is kind of combine that with the best of our curriculum know-how - so all of the right topics are in the right place. So if you're interested in creating a coherent curriculum, something that flows, definitely sign up to Craig's podcasts. If you're interested in anything to do with *Smart* and what we're doing at Oxford, there are some links. And I know, David, you've been really supportive of us and are really interested in trying some things we're doing out in your schools.

### **David Harris**

The model - your way of teaching in those books - really does make a difference. I think if we can have the right training, we can get those books out in more schools. I think it will just improve the quality of education for a lot of young people.

### **Will Power**

Yeah, let's do it. And I love to. Yeah. Integrity. Feeling the maths, loving the maths, doing it with integrity is a great mantra. Last thought, David, if you could impart one piece of wisdom on the theme of curriculum coherence, I'm putting you on the spot now, what would it be? Sentence wise.

### **David Harris**

Sentence wise. OK, so for curriculum coherence you start today and small steps at a time. So just pick one lesson. One year group. Once you've done a few schemes, a few units in as much in an unreasonable amount of depth. You will understand what you're not doing in the rest of your lessons and it will be harder for you to make excuses to not do those things, and it will be easier for you to do those things. So if I could say anything, just start today. Do something small. Do it consistently over. Even if you take a summer holiday. I know it's everyone's well-being crazy, but I often say do you know what? My job is my passion. So doing it over the holidays is no issue, and that's where I've actually made the biggest gains where I just took a summer and spent a couple hours in the mornings. Planning out quadratics lessons and looking over proofs for circle theorems and trig questions so that I have all of this knowledge just organised somewhere and on a PowerPoint or across some worksheets. So when I go to deliver it in the new year, when everything gets busy, I've already kind of, my heart and soul is already in those lessons. It's in those schemes I know what's coming and why it's there.

### **Will Power**

Love it. I love the commitment. We're all geeks. Really, at heart. And we're maths teachers and I think one takeaway for me, maybe one last thought is about what you mentioned about time and I think any heads of department listening, any senior leaders. Actually, you know, reflecting on how much time do we give our staff, our maths teachers, particularly the non specialist maths teachers, how much time do we give them to really think about the topics that they're teaching. Think about the connections between the different lessons, the different topics, how they're connected, what prior knowledge is needed to teach the next bit. So as you said, you're not just teaching everything in a bitty way. And are you giving your teachers the resources that are simple, easy to use, that strip away all of that fuff that, to be honest, doesn't help the actual teaching so that they can concentrate.? On the stuff that you've been talking about, which is the maths and the deep understanding of the concepts and topics.

Brilliant. Well, thank you so much, David. It's been incredible to speak and loved your passion and everything that you've said about your experiences. And we'll definitely have you on this space again.

**David Harris**

Look forward to.

**Will Power**

Amazing.

**OUP, Sam Evans**

Thank you so much, dear Will and David for a really interesting discussion this evening and thank you to everyone for giving up your time and coming to listen. Do follow us @OUPsecondary for updates and if you're interested in finding out more about our new *Oxford Smart* Mosaic key stage three resources, you can visit [Oxfordsecondary.com/smart-Mosaic](http://Oxfordsecondary.com/smart-Mosaic).